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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/722,348

11/25/2003

Hui Cheng

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PATENT DOCKET ADMINISTRATOR  
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EXAMINER

SMITH, JEFFREY S

ART UNIT

PAPER NUMBER

2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/20/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/722,348	CHENG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jeffrey S. Smith	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 7-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/2004, 5/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Requirement For Information***

1. Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

The information is required to document the level of skill and knowledge in the art of measuring ringing artifacts.

In response to this requirement, please state whether any search of prior art was performed. If a search was performed, please state the citation for each prior art collection searched. If any art retrieved from the search was considered material to demonstrating the knowledge of a person having ordinary skill in the art to the disclosed ringing artifact measure, provide the citation for each piece of art considered and a copy of the art.

For example, U.S. Patent Number 7,038,710 issued to Caviedes states that "Measuring ringing artifacts (R) is well known in the art" at column 5 line 40. If applicants have searched for methods of measuring ringing artifacts, or are aware of work by others that shows measuring ringing artifacts, or are aware that measuring ringing artifacts is well known in the art, then provide this information. If applicants are aware of work in measuring ringing artifacts performed by the Video Quality Experts Group, then provide this information.

Also, if a rejection to any of claims 1-6 and 19-20 has been made in one of the corresponding foreign filed applications, please submit a copy of the rejection.

This requirement is an attachment of the enclosed Office action. A complete reply to the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action.

### ***Election/Restrictions***

2. Applicant's election without traverse of claims 1-6 and 19-20 in the reply filed on February 23, 2007 is acknowledged.

Claims 7-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on February 23, 2007.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Drawings***

3. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the current drawings are informal. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent

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and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-6 and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Number 7,038,710 issued to Caviedes ("Caviedes").

For claim 1, Caviedes discloses a method for evaluating quality of a processed image, comprising the steps of: generating at least one artifact measure (col. 5 line 40); and generating a no-reference quality measure from said at least one artifact measure, where said no-reference quality measure represents a quality measure of the processed image (see abstract, "an image-quality metric is predicted based on the calculated quality metrics").

Claims 19 and 20, which are apparatus and computer readable medium claims corresponding to method claim 1, are similarly rejected.

For claim 2, Caviedes discloses that said no-reference quality measure is generated directly from said processed image (abstract).

For claim 3, Caviedes discloses that said at least one artifact measure comprises a ringing artifact measure (col. 5 line 40).

For claim 4, Caviedes discloses that generating at least one ringing artifact measure comprises: segmenting the processed image into at least one uniform region (col. 5 line 47 "low activity regions"); identifying at least one edge within the processed image (col. 5 line 44 detect strong edges); and defining at least one region adjacent to said at least one edge (col. 5 lines 46-62 "Detect regions adjacent to strong edges...where the local variance...is large").

For claim 5, Caviedes discloses that at least one ringing artifact measure is generated in accordance with: a ratio of the variance of a region adjacent to an edge to the variance of a uniform region, where the variance adjacent to an edge exceeds a threshold (col. 5 lines 50-53 "if the local variance for nearby pixels in a low activity region is 3, then the local variance for a ringing pixel must be at least four times that value." See also col. 5 lines 29-38).

6. Claims 1-3 and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Number 6,285,797 issued to Lubin et al. ("Lubin").

For claim 1, Lubin discloses a method for evaluating quality of a processed image, comprising the steps of: generating at least one artifact measure (col. 5 lines 14-16); and generating a no-reference quality measure from said at least one artifact

measure, where said no-reference quality measure represents a quality measure of the processed image (see abstract”).

Claims 19 and 20, which are apparatus and computer readable medium claims corresponding to method claim 1, are similarly rejected.

For claim 2, Lubin discloses that said no-reference quality measure is generated directly from said processed image (abstract).

For claim 3, Lubin discloses that said at least one artifact measure comprises a ringing artifact measure (col. 4 line 60).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Caviedes in view of U.S. Patent Number 6,845,180 issued to Matthews (“Matthews”).

For claim 6, Caviedes discloses the elements of base claims 1, 3 and 4.

Matthews discloses that at least one region adjacent to said at least one edge is defined in accordance with a coding block size (see col. 4 lines 51-65).

It would have been obvious to one of ordinary skill in the art at the time of invention to define a region adjacent to the edge in accordance with a coding block size because ringing artifacts do not manifest across the boundaries of the blocks used in

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compressing the image, therefore the blocks used for measuring ringing artifacts are most conveniently the same as those used for compression as taught by Matthews at col. 4 lines 62-65.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Number 6,920,252 issued to Rouvellou discloses a method of measuring a ringing artifact that uses a uniform region, an edge region, and a non-uniform region as shown in figures 1 and 2.

U.S. Patent Number 6,822,675 issued to Jung et al. discloses a method of measuring a ringing artifact as disclosed in the abstract.

U.S. Patent Number 6,847,738 issued to Scognamiglio et al. discloses a ringing artifact measure at col. 18 line 28.

U.S. Patent Number 5,819,035 issued to Devaney et al. discloses a ringing artifact measure in the title.

  
JINGGE WU  
SUPERVISORY PATENT EXAMINER